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ON BEHALF OF SUBROGATION PLAINTIFFS

**SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SAN FRANCISCO**

Coordination Proceeding Special Title
(Rule 3.550)

**CALIFORNIA NORTH BAY FIRE
CASES**

AND RELATED CROSS-ACTIONS

Case No. JCCP No. 4955
Assigned for All Purposes to:
Hon. Curtis E.A. Karnow, Dept. 304

**ALL PLAINTIFFS' JOINT REQUEST FOR
PRODUCTION OF DOCUMENTS, SET
THIRTY-FOUR, RELATED TO ALL FIRES**

**[RFPD 383-394]
(NUMBERING CORRECTED)**

PROPOUNDING PARTY: Jointly Propounded by All Plaintiffs – Liability – All Fires

RESPONDING PARTY: Defendants Pacific Gas & Electric Company and PG&E Corporation

SET NUMBER: Thirty-Four (34)

Pursuant to Code of Civil Procedure § 2031.210, *et seq.*, please respond to and produce legible copies of the documents set forth in the herein requests. This request is intended to cover all documents in your possession, or subject to your custody and control, whether the documents are

located in your home, in any of your offices, or any other office maintained by your agents, attorneys, accountants, or any of them. The items set forth below are believed to be in your possession or control and are not privileged and are reasonably calculated to lead to the discovery of admissible evidence. Pursuant to Code of Civil Procedure § 2031.250, a verified response must be served on the undersigned within thirty (30) days of service of this request.

DEFINITIONS

1. “DISTRIBUTION PLAN WORKBOOK” means a Distribution Plan Workbook as described by Laurel Reimann in her deposition in the *Butte Fire Litigation* taken on June 14, 2017, including testimony at page 35, lines 2-8, page 44, lines 12-18, see also pages 130 and 131. Copies of a Distribution Plan Workbook were marked and identified as Exhibit 777 and 837.

2. “ELECTRICAL EQUIPMENT” is defined as power lines, transformers, conductors, fuses, connections, poles, insulators, reclosers and any other components, hardware, infrastructure or equipment used by PG&E to provide electricity to the public.

3. ““RELATE”, “RELATED”, “RELATING” shall mean constituting, pertaining to, referring to, alluding to, responding to, elaborating upon, concerning, memorializing, supporting, refuting, evidencing, connected with, commenting on, regarding, discussing, showing, describing, reflecting, analyzing, recording, including, mentioning, in respect of, or about.

4. “SESSION D, SESSION 1 AND SESSION 2 PLANNING DOCUMENT” means the Session D, Session 1 and Session 2 planning documents referenced in Utility Procedure: RISK-5001 P-01 Publication Date: 11/25/2013 Rev: 0, page 2 of 10, PG&E JCCP 140785 as produced in the *Butte Fire Litigation*. The entire document is PG&E JCCP 140784 - PG&E JCCP 140793, which is attached hereto as Exhibit A. Those terms also are further defined in the Prepared Testimony of Janaise Markland, attached hereto as Exhibit B.

5. “YOU” and “YOUR” is defined as Defendants Pacific Gas & Electric Company, a California corporation, and PG&E Corporation.

REQUEST FOR PRODUCTION NO. 383:

Each and every DISTRIBUTION PLAN WORKBOOK, maintained by PG&E, for the years 2014, 2015, 2016, 2017, and 2018, for each division in its native format.

REQUEST FOR PRODUCTION NO. 384:

Each and every writing, as defined by Evidence Code Section 250, RELATING TO SESSION D, for PG&E's Electric Operations, for the years 2014, 2015, 2016, 2017 and 2018.

REQUEST FOR PRODUCTION NO. 385:

Each and every, SESSION D, SESSION 1 AND SESSION 2 PLANNING DOCUMENT, for the years 2014, 2015, 2016, 2017, and 2018 RELATING TO PG&E's Electric Operations and the Line of Business risk referred to as "wildfire."

REQUEST FOR PRODUCTION NO. 386:

Each and every writing, as defined by Evidence Code Section 250, upon which the following statement in Exhibit B was based:

As a result, tree-related outages are in the neighborhood of 17 per 1,000 miles, < 0.02 percent of trees in contact, and there are a small number of wildfires caused by PG&E equipment each year.

PACIFIC GAS AND ELECTRIC COMPANY SAFETY MODEL ASSESSMENT PROCEEDING PREPARED TESTIMONY, May 1, 2015, page 2-12 of Exhibit B.

REQUEST FOR PRODUCTION NO. 387:

Each report prepared by Charles Filmer, between January 1, 2013 and January 1, 2018, RELATED TO hazard trees, the number of wildfires caused by PG&E equipment, the risk posed by various species of trees to ELECTRICAL EQUIPMENT and/or the risk of wildfire posed by various species of trees.

REQUEST FOR PRODUCTION NO. 388:

Each report prepared by PG&E between January 1, 2013 to January 1, 2018 RELATED TO vegetation-related fire incidents, including but not limited to the number of wildfires, risk posed by tree type, and cause of vegetation fire. This request includes reports prepared by Charles Filmer for years subsequent to PG&E_JCCP 136135-136145 produced in the *Butte Fire Litigation*.

REQUEST FOR PRODUCTION NO. 389:

Each and every writing, as defined by Evidence Code Section 250, which was provided to the Risk and Compliance Committee, the PG&E Corporation Board of Directors and/or any of

its committees, relating to the Electric Operations Line of Business (LOB) risk referred to as “wildfire.”

REQUEST FOR PRODUCTION NO. 390:

Each and every writing, as defined by Evidence Code Section 250, which was issued by PG&E prior to October 8, 2017, which PG&E intended to be a warning to the public that PG&E was aware that a “small number of wildfires” would be caused by PG&E “equipment each year.”

REQUEST FOR PRODUCTION NO. 391:

Each and every writing, as defined by Evidence Section 250, which was issued by PG&E prior to October 8, 2017, which PG&E intended to be a warning to the public that PG&E may have “< 0.02 percent of trees in contact” with its lines.

REQUEST FOR PRODUCTION NO. 392:

Each and every writing, as defined by Evidence Section 250, which identifies the number of wildfires caused by ELECTRICAL EQUIPMENT in the years 2013, 2014, 2015, 2016, and 2017.

REQUEST FOR PRODUCTION NO. 393:

Each and every writing, as defined by Evidence Code Section 250, which reflects any decision made by PG&E with regard to “at what point it is okay to not mitigate the risk further,” as referenced by PG&E in its PACIFIC GAS AND ELECTRIC COMPANY SAFETY MODEL ASSESSMENT PROCEEDING PREPARED TESTIMONY, May 1, 2015, page 2-12 of Exhibit B.

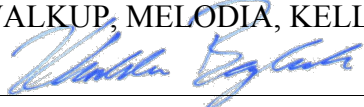
REQUEST FOR PRODUCTION NO. 394:

Each and every writing, as defined by Evidence Code Section 250, which reflects the “tradeoff decisions” made by PG&E as referenced in PG&E’s PACIFIC GAS AND ELECTRIC COMPANY SAFETY MODEL ASSESSMENT PROCEEDING PREPARED TESTIMONY, May 1, 2015, page 2-12 of Exhibit B.

Dated: March 19, 2018

WALKUP, MELODIA, KELLY & SCHOENBERGER

By:


MICHAEL A. KELLY
KHALDOUN A. BAGHDADI
ANDREW P. McDEVITT
On behalf of Direct Plaintiffs

1 Dated: March 19, 2018

JANG & ASSOCIATES LLP

2
3 By:

4 ALAN J. JANG
SALLY NOMA

On behalf of Subrogation Plaintiffs

EXHIBIT A



**Pacific Gas and
Electric Company®**

Utility Procedure: RISK-5001P-01

Publication Date: 11/25/2013 Rev: 0

Enterprise and Operational Risk Management Risk Identification and Evaluation

Summary

This procedure and its attachments describe how to complete the risk identification through risk evaluation phases of PG&E's Enterprise and Operational Risk Management Framework. It implements Subsection 1, Risk Identification and Evaluation, of RISK-5001S Enterprise and Operational Risk Management Standard.

Level of Use: Informational Use

Target Audience

PG&E Corporation and Pacific Gas and Electric Company (together, PG&E) employees who lead or oversee risk management activities

Safety

NA

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Enterprise and Operational Risk Management Risk Identification and Evaluation

Procedure Steps

1 Risk Identification

1.1 Each line of business (LOB) identifies new risks in one of the following ways:

- In the fourth quarter of every year, during a series of Risk Identification Workshops that the LOB Risk Manager conducts as part of the Annual Risk Refresh.
- Between each year's annual refresh, through ongoing communication and consultation with subject matter experts (SME) and leadership.

1.2 Each LOB manages risk in one of two ways:

- By a single LOB that independently owns a risk that does not span across the entire company or
- By a primary LOB that shares a risk (shared risk) that spans across the entire company, for which the shared risk owner provides oversight, direction, and support to all other LOBs to assess and manage the risk. (See Attachment 1: RASCI Diagram for specific roles and responsibilities for managing shared risks.)

1.3 In advance of each Risk Identification Workshop, the Risk Manager works with the Enterprise & Operational Risk Management (EORM) Principal to do the following:

- Establish the context to identify risks within the LOB
- Define the scope (i.e., activities, processes, functions, programs, products, services, or assets in terms of time and location)
- Define the goals and objectives of risk identification workshops
- Identify stakeholders and workshop participants and define roles and responsibilities (i.e., Risk Owner, SMEs, Compliance Champion, other LOB SMEs and Risk Owners)
- Choose the appropriate tools, techniques, and methods to use in the Risk Identification, Risk Analysis, and Risk Evaluation phases (a summarized list of example techniques is included in Attachment 2: Risk Analysis Methods)
- Specify the decisions that have to be made
- Identify possible sources of data and analysis to be included.

1.4 For the Annual Risk Refresh, the Risk Manager performs the following:

1. Reviews the current risk register
2. Reviews progress made on risk response plans
3. Reviews Session D, Session 1, and Session 2 planning documents
4. Meets with Integrated Planning Lead to review organization's goals and objectives to determine if there are risks not already included on the risk register that would prevent the LOB from meeting its current objectives and strategies



Enterprise and Operational Risk Management Risk Identification and Evaluation

Step 1.4 (continued)

5. Reviews internal and external data to determine if any new risks should be added to the risk register, or if existing risks have increased or decreased considering the following:

- Internal incident data
- Performance metrics
- Audit reports
- SME and industry white papers
- Management and SME interviews

- 1.5 IF a new risk is identified during one of the workshops or between the annual refresh,

THEN the Risk Manager documents in the risk assessment tool at least the following:

1. Risk name
2. Risk description, including the following:
3. Expressed as "Risk of X resulting in Y", where X is the event and Y is the impact of the event
4. Defined as the 95th percentile "worse case probable" impact event
5. Described using only first order / direct impacts
6. Primary Risk Owner;
7. LOB Risk Owner
8. Risk Owner name;
9. LOB interdependencies

- 1.6 The Risk Owner ensures the risk description is defined as required in Step 1.5.b.

2 Initial and Annual Refresh Risk Scoring

- 2.1 IF LOB identifies a new risk,

THEN the Risk Manager works with the Risk Owner, Compliance Champion, and SMEs to use RET2 to generate initial inherent and residual risk scores.



Enterprise and Operational Risk Management Risk Identification and Evaluation

2.2 IF the Risk Manager is performing the annual refresh of the risk register,

THEN the Risk Manager works with the Risk Owner and Compliance Champion to review the following:

- Frequencies of events since the last time the risk was scored
- Impacts of events since the last time the risk was scored
- Mitigations since the last time the risk was scored.

2.3 IF the frequencies, impacts, and mitigations since the last time the risk was scored indicate that the risk score on the risk register needs updating,

THEN the Risk Manager performs the following:

1. Updates the RET2 inputs to generate new scores and
2. Updates the Risk Register accordingly including the following:
 - Justification for changing each risk's score
 - Proposed risk re-prioritization

3 LOB Risk & Compliance Committee Review of Risk Register

3.1 The Risk Manager presents new risks with the updated risk register and proposed re-prioritization to the Risk and Compliance Committee (RCC) for approval.

3.2 IF the RCC approves the new risks and the prioritization along with the updated risk register,

THEN the Risk Manager performs the following:

1. Adds the new risks and updates existing risks in the Enterprise Compliance Tracking System – Risk (ECTS – Risk)
2. Updates risk management plan and schedule
3. Informs Risk Owner, Compliance Champion, and SMEs of any changes



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Enterprise and Operational Risk Management Risk Identification and Evaluation

4 Risk Analysis

- 4.1 Using risk analysis tools and techniques identified in Step 1.3, the Risk Manager facilitates a series of Risk Analysis Workshops with SMEs and Compliance Champion aimed at identifying the underlying risk drivers that could create the risk.
- 4.2 IF the risk is a shared risk as described in Step 1.2,

THEN the Risk Manager includes both the Primary LOB Risk Owner and the LOB Risk Owner in all related Risk Analysis Workshops to ensure risk management efforts are coordinated across the entity.
- 4.3 In the Risk Analysis workshops, SMEs use a combination of the following to identify all risk drivers that could cause the risk to occur:
 - Internal incident and performance data
 - External event data
 - Personal and professional expertise
 - Risk perceptions
- 4.4 When performing a risk analysis, Risk Manager considers the following:
 - Mapping of risk drivers to other drivers of the same risk
 - Impact risk drivers may have on other risks
 - Mapping processes and compliance requirements to risk drivers to provide a better understanding of the various ways the risk may occur and how the current and forecasted mitigations will reduce the overall risk profile of PG&E
- 4.5 The Risk Manager documents in the risk assessment tool at least the following for each risk driver:
 - Risk driver name
 - Risk driver description
 - Risk driver owner



Enterprise and Operational Risk Management Risk Identification and Evaluation

5 Risk Evaluation

- 5.1 The Risk Manager facilitates a series of Risk Evaluation Workshops with SMEs and Compliance Champion to understand how current mitigations and controls reduce the frequency and impact on the risk and its risk drivers, including the following:

- Using the risk driver analysis established in Subsection 4
- Considering compliance performance when calculating current residual risk

- 5.2 IF the risk is a shared risk as described in Step 1.2,

THEN the Risk Manager includes both the Primary LOB Risk Owner and the LOB Risk Owner in all related Risk Evaluation Workshops to ensure risk management efforts are coordinated across the entity.

- 5.3 IF a current mitigation is identified to modify the frequency, impact, or both of a risk or its risk drivers,

THEN the Risk Manager documents in the risk assessment tool at least the following for all known current mitigations:

- Mitigation / control name
- Mitigation / control Description
- Mitigation / control owner
- Risk reduction source (Frequency and/or Impact)
- Process area
- Control type (detective, preventive)
- Control strength (adequate, needs strengthening, not adequate)
- LOB interdependencies
- Overall control strength
- Justification for the overall control strength

- 5.4 IF internal or external data is available,

THEN the Risk Manager and SMEs consider the data to determine the appropriate frequency and impact.



Enterprise and Operational Risk Management Risk Identification and Evaluation

- 5.5 IF internal or external data is not available OR not known at the time of the risk evaluation,

THEN the Risk Owner uses professional judgment to determine the appropriate frequency, and develops a plan to collect data for future analysis.

6 Risk Scoring

- 6.1 The Risk Manager facilitates Risk Scoring Workshops with Risk Owner, Compliance Champion, and SMEs to determine inherent and current residual risk scores for each risk.

- 6.2 IF the risk is a shared risk,

THEN the Risk Manager includes both the Primary LOB Risk Owner and the LOB Risk Owners in all related Risk Scoring Workshops to ensure risk management efforts are coordinated across the entity.

- 6.3 The Risk Manager uses the RET2 to establish risk scores for all risks and using Attachment 3: RET2 User Manual for Risk Scoring.

- 6.4 The Risk Manager, Risk Owner, SMEs, and Compliance Champion use the risk driver and risk evaluation information identified during the risk analysis and risk evaluation process to determine the appropriate frequency and impact levels in RET2.

- 6.5 The Risk Manager documents in RET2 the risk score justification and how the risk score was determined for the inherent and residual risk scores for each risk.

- 6.6 The Risk Manager presents the results of the risk assessment, i.e., the risk register, to the RCC.

- 6.7 IF the Risk Manager, Risk Owner, and SMEs determine that a control is not working as designed, OR

IF reasonable options exist to reduce the current residual risk further,

THEN the Risk Manager proposes to the RCC the intent to develop a Risk Response Plan for that risk, as documented in the Enterprise and Operational Risk Management Risk Response Procedure (RISK-5001P-02).

- 6.8 IF the RCC approves a new risk score or approves an existing risk record to be updated,

THEN the Risk Manager updates that risk record in ECTS – Risk.

END of Instructions



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Utility Procedure: RISK-5001P-01

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Enterprise and Operational Risk Management Risk Identification and Evaluation

Definitions

Control

Measure that ensures the mitigations put in place to modify risk performs as intended.

Communication and Consultation

Continual and iterative processes that an organization conducts to provide, share or obtain information, and to engage in dialogue with stakeholders regarding the management of risk

Establish the Context

Defining the external and internal parameters to be taken into account when managing risk, and setting the scope and risk criteria

Event

Occurrence or change of a particular set of circumstances

Frequency

Number of events or outcomes per defined unit of time

Impact

Outcome of an event affecting objectives

Inherent Risk

Risk without current mitigations and controls in place.

Mitigation

Measure that is modifying risk

Residual Risk

Risk remaining after current mitigations and controls with risk control realized.

Risk Analysis

Process to comprehend the nature of risk and to determine the level of risk

Risk Assessment

Overall process of risk identification, risk analysis and risk evaluation

Risk Description

Structured statement of risk usually containing four elements: sources, events, causes and consequences

Risk Driver

Element which alone or in combination with other drivers has the intrinsic potential to give rise to risk (can be a single risk or multiple risks)



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Enterprise and Operational Risk Management Risk Identification and Evaluation

Risk Evaluation

Process of comparing the results of risk analysis with risk controls to determine whether the risk and/or its magnitude is acceptable or tolerable

Risk Identification

Process of finding, recognizing and describing risks

Risk Management Plan

Scheme within the risk management framework specifying the approach, the management components and resources to be applied to the management of risk

Risk Owner

Person or entity with the accountability and authority to manage a risk

Risk Perception

Stakeholder's view on a risk

Risk Register

Record of information about identified risks

Shared Risk

A risk that spans across the entire company, for which the shared risk owner provides oversight, direction, and support to all other LOBs to assess and manage the risk.

Single Line of Business Risk

A risk that is independently owned by a single line of business that do not span across multiple lines of business

Stakeholder

Person or organization that can affect, be affected by, or perceive themselves to be affected by a decision or activity

Implementation Responsibilities

NA

Governing Document

RISK-01: PG&E Corporation Risk Management Policy

RISK-02: Pacific Gas & Electric Company Risk Management Policy

RISK-5001S: Enterprise and Operational Risk Management Standard



**Pacific Gas and
Electric Company**

Utility Procedure: RISK-5001P-01

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Enterprise and Operational Risk Management Risk Identification and Evaluation

**Compliance
Requirement/
Regulatory
Commitment**

NA

**Reference
Documents**

NA

Appendices

NA

Attachments

[Attachment 1: RASCI Diagram](#)

[Attachment 2: Risk Analysis Methods](#)

[Attachment 3: RET2 User Manual for Risk Scoring](#)

**Document
Recision**

NA

Approved By

Janaize Markland, Sr. Manager, Enterprise and Operational Risk Management

Document Owner

John Panion, Principal, Enterprise and Operational Risk Management

**Document
Contact**

John Panion, Principal, Enterprise and Operational Risk Management

Revision Notes

Where?	What Changed?
NA	This is a new procedure.

EXHIBIT B

Application: 15-05-xxx
(U 39 M)
Exhibit No.: _____
Date: May 1, 2015
Witness(es): Various

PACIFIC GAS AND ELECTRIC COMPANY
SAFETY MODEL ASSESSMENT PROCEEDING
PREPARED TESTIMONY



SELECTED PAGES ONLY
FROM THE 147 PAGE SUBMISSION BY PG&E

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF JANAIZE MARKLAND

Q 1 Please state your name and business address.

A 1 My name is Janaize Markland, and my business address is Pacific Gas and Electric Company, 111 Stony Circle, Santa Rosa, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am the director of PG&E's Enterprise and Operational Risk and Insurance Department. My department is responsible for overseeing PG&E's Enterprise and Operational Risk Management (EORM) Program and for procuring insurance to transfer PG&E's residual financial risks that could result from catastrophic property or casualty losses.

Q 3 Please summarize your educational and professional background.

A 3 I earned a bachelor of science degree in chemistry from the University of British Columbia and a master of science degree in Environmental Management from Royal Roads University in Victoria, British Columbia.

I am a member of the Enterprise Risk Management Utilities Roundtable and serve as chair of the Edison Electric Institute Enterprise Risk Management Task Force Steering Committee.

Prior to my career in the EORM and Insurance Department, I held a variety of roles at PG&E, including manager of Compliance and Ethics and positions in the Safety and Shared Services organization, where I provided direct environmental compliance support to PG&E's operating units. Before joining PG&E, I worked at BC TEL, a telephone utility based in Burnaby, British Columbia, and its successor company, Alberta-based TELUS Corporation, where I developed an environmental program governing the newly merged companies.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's S-MAP proceeding:

- Chapter 2, "Companywide Models and Approaches for Assessing Risk."
- Chapter 6, "Risk Lexicon."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF JAMIE L. MARTIN

Q 1 Please state your name and business address.

A 1 My name is Jamie L. Martin, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I currently hold the position of director of Economic and Project Analysis. In this capacity, I supervise:

- Financial analysis and economic evaluations concerning a range of investment matters.
- The Risk Informed Budget Allocation process as part of the Company's Integrated Planning Process.
- Business case guidance and reviews of major capital project proposals. I report to the Vice President, Finance, of PG&E.

Q 3 Please summarize your educational and professional background.

A 3 I graduated from the University of San Francisco, in 2004, with a bachelor of science degree in finance. I joined PG&E in 2007 as a senior business analyst in the Finance organization, specifically in Project Finance. I have since held a succession of positions in the finance organization. In 2009, I was promoted to supervisor in the Gas & Electric Transmission and Distribution Business Finance organization, responsible for operational financial planning, budgeting and forecasting. In 2010, I was promoted to manager in the Power Generation Business Finance organization, where I was responsible for managing a team that supported operational financial planning, budgeting and forecasting. In 2012, I completed a 6-month rotation as manager of Investor Relations, where I was responsible for communication with the investment community and prepared senior leadership for quarterly earnings calls and expectations for future performance. In late 2012, I became manager of the Financial Forecasting & Reporting team, where I was responsible for enterprise-level earnings forecasts, year-over-year and long-term budgets and forecasts, functional

1 area income statement analysis and board of director financial materials.

2 I assumed my current position in March 2014.

3 Q 4 What is the purpose of your testimony?

4 A 4 I am sponsoring Chapter 3, "Companywide Models and Approaches to Risk
5 Informed Budget Allocation," in PG&E's S-MAP proceeding.

6 Q 5 Does this conclude your statement of qualifications?

7 A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
OVERVIEW AND SUMMARY

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
OVERVIEW AND SUMMARY

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
OVERVIEW AND SUMMARY

A. Introduction

In this proceeding, Pacific Gas and Electric Company (PG&E) provides an introduction and overview of its models and methodologies used to prioritize and mitigate safety risks. This proceeding—known as the Safety Model Assessment Proceeding (S-MAP)—is submitted in accordance with Decision 14-12-025 of the California Public Utilities Commission (CPUC or Commission).

1. General Principles Guiding This Filing

PG&E has embraced risk-informed decision-making in its planning and budgeting process and fully supports the Commission's increased focus in this area. In the rapidly developing area of risk assessment and mitigation, utilities will continue to identify areas of improvement for their processes.¹ Similarly, the Commission and stakeholders may need to increase their own technical capabilities for evaluating the risks facing utilities and the proposed strategies for mitigating those risks. All participants in this new dialogue will also need to ensure that they share a common understanding of terms. If not, misunderstandings likely will ensue.

Utilities, the Commission and stakeholders are in this together. Accordingly, PG&E has approached this proceeding with the following general principles in mind.

a. PG&E Welcomes a Sharing of Risk Management Practices

PG&E welcomes a sharing of risk management practices—both formally and informally—among stakeholders in California. In addition to this proceeding, PG&E has reached out to other participants in the State and around the country to share lessons learned. This sharing will continue beyond the issues contemplated for this first S-MAP.

¹ While PG&E provides its principal risk models and methodologies in this filing, PG&E expects to develop additional tools, models and standards as its risk management process matures.

1 **b. Cooperation Among the Parties Will Advance the Industry**

2 In the developing area of utility risk management, cooperation
3 among the parties will best serve to advance the industry's efforts. All of
4 the S-MAP participants have a common interest in advancing the art
5 and science of utility risk management. To that end, PG&E aims to
6 promote a cooperative atmosphere in this proceeding. The topics to be
7 covered in the S-MAP lend themselves well to workshops and
8 multimedia demonstrations, not the formality of evidentiary hearings.

9 **c. PG&E Has Focused on the Management of Safety Risks**

10 PG&E expects that the S-MAP—and future Risk Assessment and
11 Mitigation Proceedings' (RAMP) and General Rate Cases' (GRC)
12 discussion of risks—will focus primarily on key safety risks. PG&E
13 manages other important risks, such as environmental and financial
14 risks, although PG&E expects that such risks will not be the focus in the
15 S-MAP.

16 **d. Uniform Standards Are Appropriate in Some Areas and Inadvisable**
17 **in Others**

18 In the decision, the CPUC questions whether or not “uniform or
19 common standards” is a goal that should be pursued.² Some areas
20 lend themselves well to common standards. Others do not. The former
21 category could include, for example, the development of a risk lexicon;
22 the application of a common framework—ISO 31000; and the use of a
23 common process as described in the Cycla Corporation's (Cycla)
24 May 16, 2013 report in PG&E's 2014 GRC.³ The latter category
25 includes algorithms and programs for addressing risk, which are likely to
26 differ from company-to-company, based on the characteristics of that
27 company's assets, environment and customers.

2 D.14-12-025, mimeo, p. 30 (“The S-MAP decision can also address whether uniform or common standards must be used by the energy utilities in the next S-MAP filings, or direct the energy utilities to pursue the issue further.”).

3 Cycla's 10-step process is presented in Section B.1. below.

1 **e. The S-MAP Should Not Be Assumed to Be Open-Ended**

2 The decision states that the S-MAP will take place “every
3 three years...unless directed otherwise by the Commission.”⁴ At this
4 junction, it would be inappropriate to assume that the number of
5 S-MAPs will be open-ended. One must be cognizant of the impacts of
6 new proceedings. Such proceedings translate to higher administrative
7 costs for the utilities and, of course, stress the limited resources of the
8 Commission and stakeholders.

9 In addition to our concerns about the number of S-MAPs going
10 forward, PG&E is equally concerned that the S-MAPs are resolved
11 timely. The Commission’s Decision 14-12-025 requires that the S-MAP
12 decision be issued prior to the first RAMP filing in order to improve the
13 incorporation of risk and safety into utility rate cases. Accordingly,
14 PG&E would like to see this proceeding move forward efficiently and
15 conclude promptly.

16 **2. Organization of This Testimony**

17 PG&E’s testimony is comprised of five chapters. The first two chapters
18 address enterprisewide models. In Chapter 2, PG&E presents its Enterprise
19 and Operational Risk Management Program (EORM) and Risk Evaluation
20 Tool (RET), which are used to identify and rank enterprisewide and
21 operational risks. In Chapter 3, PG&E presents its risk-informed budget
22 allocation (RIBA) process, which is used to prioritize work in the core lines of
23 business according to risk scores. Thereafter, PG&E presents line of
24 business-specific approaches to risk management. Chapter 4 presents
25 PG&E’s approach in Electric Operations and Nuclear Power Generation.
26 Chapter 5 presents PG&E’s approach in Gas Operations. Chapter 6
27 presents a risk lexicon developed in conjunction with Southern California
28 Edison Company (SCE) and the Sempra utilities (Sempra). The definitions
29 in Chapter 6 are thus jointly sponsored by SCE, Sempra and PG&E.

4 D.14-12-025, mimeo, p. 55 (Ordering Paragraph 5).

1 The testimony takes the following structure:

**TABLE 1-1
PACIFIC GAS AND ELECTRIC COMPANY
STRUCTURE OF TESTIMONY**

Chapter	Title	Witness
1	Overview and Summary	S. Sharp
2	Companywide Models and Approaches for Assessing Risk	J. Markland
3	Companywide Models and Approaches to Risk Informed Budget Allocation	J. Martin
4	Electric Operations and Nuclear Power Generation	E. Back and C. Harbor
5	Gas Operations	C. Chapman
6	Risk Lexicon	J. Markland
Appendix A	Statements of Qualifications	All

2 **3. Relationship of This Filing to PG&E's Upcoming GRC**

3 This S-MAP is not a formal precursor to PG&E's 2017 GRC. (PG&E will
4 file its 2017 GRC on September 1, 2015.) PG&E's 2020 GRC will be the
5 first PG&E GRC to incorporate the results of this S-MAP and to have a
6 formal RAMP. PG&E expects to submit the RAMP for the 2020 GRC in
7 October 2017.

8 Although the new risk proceedings instituted through
9 Decision 14-12-025 will not be fully incorporated until PG&E's 2020 GRC,
10 PG&E will follow the spirit of Decision 14-12-025 in the preparation of its
11 2017 case. To that end, PG&E will provide more extensive testimony on
12 safety and risk and PG&E will explain how its forecast relates to safety and
13 risk priorities. The 2017 GRC testimony will also follow the Commission's
14 directive from PG&E's 2014 GRC, namely:

- 15 • PG&E will provide additional testimony on its Integrated Planning
16 Process; affirmatively showing that risk management through integrated
17 planning forms the foundation of the system safety and compliance
18 projects and programs forecast in its 2017 GRC.
- 19 • PG&E will prioritize projects and programs in the 2017 GRC by using
20 risk-based criteria and will describe how the projects and programs it is

forecasting mitigate the system safety risks listed on PG&E's Risk Register.

- PG&E will provide enhanced testimony on its overall risk program from its Chief Risk Officer as well as line of business-specific risk testimony from the risk or asset management leads from Electric Operations, Energy Supply and Gas Operations.⁵

4. Risk and PG&E's Integrated Planning Process

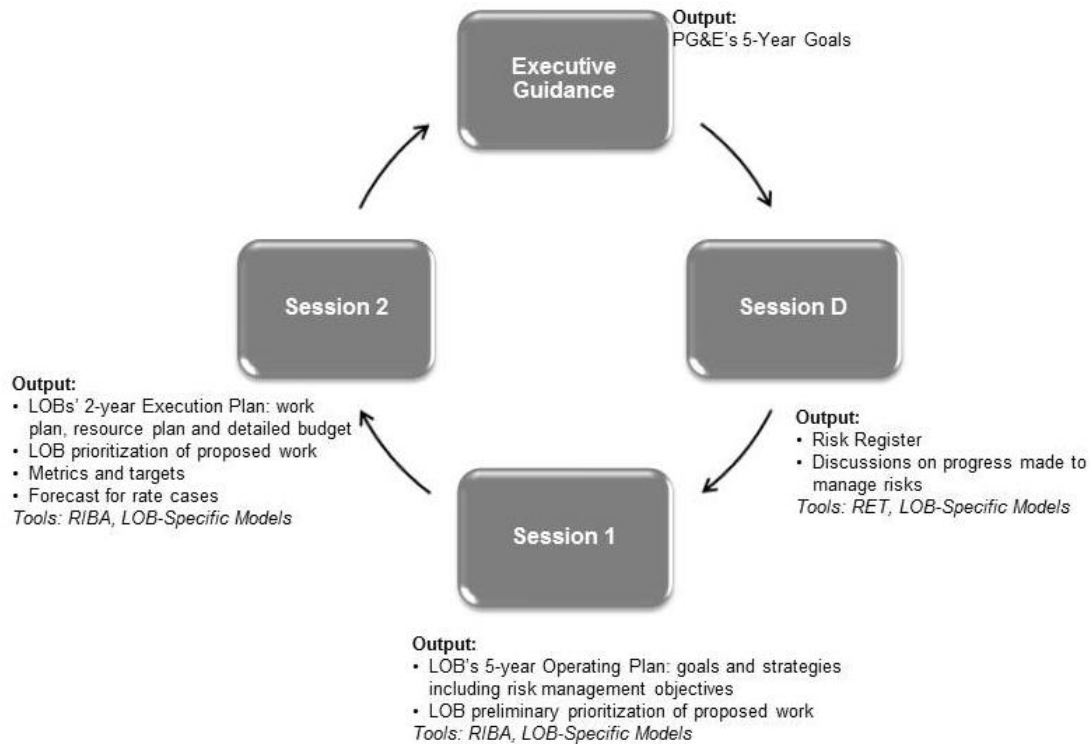
As described above, PG&E will provide additional testimony on its Integrated Planning Process in its 2017 GRC. The annual Integrated Planning Process consists of four primary steps.⁶ The first step is establishing "Executive Guidance," where PG&E sets forth its goals for the next five years. The second step is Session D—developed from January through April—which is used to review and discuss progress made to manage PG&E's top compliance, enterprise and operational risks. The third step in the process is Session 1—developed from April through July—which outlines PG&E's 5-year Operating Plan, including goals and strategies. The fourth step is Session 2—developed from August through October—which sets forth PG&E's 2-year execution plan. The Integrated Planning Process is an iterative cycle and adjustments can be made to PG&E's plan to incorporate emerging information. For example, while Session D reviews are completed in April, senior management—through their risk and compliance committees—regularly review the status of risks and mitigation activities. Additionally, the Risk Policy Committee, which is chaired by the Chief Executive Officer, conducts a "mid-cycle check in" where the Committee reviews progress relative to PG&E's risk profile and implementation of the EORM program. The leadership team will collectively make a decision to address newly identified gaps in PG&E's work plan if warranted.

⁵ D.14-08-032, mimeo, p. 12.

⁶ PG&E's Integrated Planning Process also contains an additional step, Session C, for the Company's senior leadership development and succession planning.

Figure 1-1 below illustrates the Integrated Planning Process cycle and the key outputs of the process and the tools used in each step of the process.

**FIGURE 1-1
PACIFIC GAS AND ELECTRIC COMPANY
INTEGRATED PLANNING PROCESS**



B. Approach to This S-MAP

PG&E has approached this S-MAP in accordance with the expectations of the Refined Straw Proposal, which envisioned:

the initial S-MAP [would] 'serve primarily an informational and education function – acquainting parties with the utilities' models – and provide utilities an opportunity to hear reactions from Commission staff and parties and modify their models as they deem appropriate in response to Staff/parties' concerns and recommendations.⁷

PG&E understands that the Commission's expectations and scope of the S-MAP will change over time. Not everything can be accomplished in the first S-MAP.⁸

⁷ D.14-12-025, mimeo, pp. 22-23.

⁸ D.14-12-025, mimeo, p. 26.

While the Commission considers the longer term goal of evaluating “uniform and common standards,” the Commission raised three topics for consideration.⁹ First is “whether the S-MAP should be a recurring proceeding, and if so, how often should that be.”¹⁰ Second is whether workshops or an S-MAP working group should determine whether common standards can be developed.¹¹ Third is whether Commission staff and other parties have sufficient expertise to understand and analyze the S-MAP methods and methodologies.¹²

PG&E addresses these three topics below.

1. Content of This S-MAP and Future Filings

The Commission has concluded that S-MAPs “should be held at least two times, at an interval of three years.”¹³ And, “[i]n the second proceeding, the Commission can decide whether the S-MAP proceedings should continue in the future or be terminated.”¹⁴

PG&E has set forth a framework in Table 1-2 for the content of two S-MAPs. This framework is tied to Cyclo’s 10-step process reflecting the elements of a risk-informed resource allocation process. Cyclo presented this 10-step process in PG&E’s 2014 GRC. As shown in Table 1-2, PG&E proposes addressing five of the ten steps in this first S-MAP and deferring two steps to the second S-MAP. (The remaining three steps are already addressed in the GRC process.) PG&E would defer those steps (1) pertaining to evaluating risk reduction; and (2) monitoring the effectiveness of risk control measures. As explained more fully in Chapter 2, Sections D.2.a. and D.3., quantifying risk reduction is in a particularly early state of development. S-MAP discussions in this area would benefit from additional time to mature.

⁹ D.14-12-025, mimeo, p. 26.

¹⁰ D.14-12-025, mimeo, p. 26.

¹¹ D.14-12-025, mimeo, p. 26.

¹² D.14-12-025, mimeo, pp. 26-27.

¹³ D.14-12-025, mimeo, p. 27.

¹⁴ D.14-12-025, mimeo, p. 27.

TABLE 1-2
PACIFIC GAS AND ELECTRIC COMPANY
CYCLA'S 10-STEP RISK PROCESS

Step	Cycla Process	Model/Method/Process	Proceeding Where Process Step Should Be Addressed
1	Identify Threats	EORM Program Session D – Risk RET	This First S-MAP (Chapters 2, 4, 5)
2	Characterize Sources of Risk	EORM Program Session D – Risk RET	This First S-MAP (Chapters 2, 4, 5)
3	Identify Candidate Risk Control Measures (RCM)	EORM Program Session D – Risk Session 1 – Strategy Session 2 – Execution Plan RIBA	This First S-MAP (Chapters 2, 3, 4, 5)
4	Evaluate the Anticipated Risk Reduction for Identified RCM	EORM Program Session D – Risk	Second S-MAP
5	Determine Resource Requirements for Identified RCMs	EORM Program Session 1 – Strategy Session 2 – Execution Plan RIBA	This First S-MAP (Chapters 3, 4, 5)
6	Select RCMs Considering Resource Requirements and Anticipated Risk Reduction	EORM Program Session 1 – Strategy Session 2 – Execution Plan RIBA	This First S-MAP (Chapters 3, 4, 5)
7	Determine Total Resource Requirement for Selected RCMs	EORM Program Session 1 – Strategy Session 2 – Execution Plan RIBA	General Rate Case
8	Adjust the Set of RCMs to be presented in GRC Considering Resource Constraints	EORM Program Session 1 – Strategy Session 2 – Execution Plan RIBA	General Rate Case
9	Adjust RCMs for Implementation following CPUC decision on Allowed Resources	EORM Program Session 2 – Execution Plan RIBA	General Rate Case
10	Monitor the Effectiveness of RCMs	EORM Program Session D – Risk	Second S-MAP

2. The Role of Workshops

On the topic of how to involve workshops in the S-MAP, the Commission concluded that they “could be useful toward reaching a consensus about uniform or common standards. These additional workshops or working

1 groups are something the parties and the ALJ in the S-MAP proceedings
2 should consider.”¹⁵

3 PG&E agrees that workshops would be useful. Indeed, PG&E believes
4 that workshops are likely to be more fruitful than evidentiary hearings for the
5 topics under consideration. These topics are technical and include
6 calculations, algorithms, and complex concepts. These issues are best, and
7 most easily, explored through workshop discussions, not formal
8 cross-examination.

9 For these reasons, PG&E proposes a series of workshops in lieu of
10 evidentiary hearings. These workshops should cover the following topics:

- 11 • Risk Lexicon – this session would have the parties work together to
12 develop a risk lexicon based upon that jointly put forward by the utilities.
13 PG&E envisions that this lexicon would be an educational resource,
14 maintained by the Commission, that could be used by the Commission,
15 utilities and stakeholders.
- 16 • Benchmarking of Utility Risk Processes – this session would examine
17 the current state of utility risk management outside of California.
- 18 • Presentation of Utility Risk Models – this session would allow for more
19 in-depth presentations and discussions concerning the utility risk
20 models. This session could include live demonstrations of the models.
- 21 • Data Issues – this session would address data issues such as the
22 relative value of qualitative and quantitative data, as well as the use of
23 predictive vs. lagging indicators.
- 24 • Areas for Common Standards – this session would address the
25 Commission’s interest in exploring whether common standards would be
26 useful and have the parties work together to identify possible areas for
27 such standards.

28 If the Commission wishes to develop a record concerning these
29 workshops, PG&E would support videotaping/webcasting the workshops,
30 working with staff to develop reports, or otherwise formalizing the content of
31 the workshops.

¹⁵ D.14-12-025, mimeo, p. 28.

3. Commission and Stakeholder Expertise

PG&E is not in the best position to assess whether or not the Commission and stakeholders currently have the requisite expertise to review the utility models and methodologies. In the past, both Commission staff and intervenors have expressed concerns about the level of their expertise. To the extent that additional expertise is required, PG&E supports the Commission and parties obtaining such expertise through internal staff (in the long-term) or external consultants (in the short-term). The more expertise at the table, the more productive this proceeding is likely to be. In this regard, PG&E supported the hiring of experts by the Safety and Enforcement Division during PG&E's 2014 GRC.

C. Relief Requested

PG&E understands the main purpose of this first S-MAP proceeding to be an informational and educational one.¹⁶ Accordingly, the formal relief requested by PG&E is relatively limited.

PG&E seeks:

- The Commission's development of a risk lexicon based on the definitions proposed herein.
- The Commission's guidance for the content of the next S-MAP. PG&E recommends that the next S-MAP focus on:
 - A methodology for evaluating anticipated risk reduction and monitoring the effectiveness of identified risk control measures.
 - The evaluation of common standards in areas where the Commission in this S-MAP deems such standards to be advisable.

¹⁶ D.14-12-025, mimeo, pp. 22-23.

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 2
COMPANYWIDE MODELS AND APPROACHES FOR
ASSESSING RISK

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 2
COMPANYWIDE MODELS AND APPROACHES FOR ASSESSING RISK

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1 **PACIFIC GAS AND ELECTRIC COMPANY**
2 **CHAPTER 2**
3 **COMPANYWIDE MODELS AND APPROACHES FOR ASSESSING**
4 **RISK**

5 **A. Introduction**

6 Pacific Gas and Electric Company's (PG&E) goal is to deliver safe, reliable
7 and affordable gas and electric service to the millions of homes and businesses
8 that depend on us. Numerous operational risks affect the provision of gas and
9 electric service, including natural hazards such as seismic activity and wildfires.
10 Although risk cannot be eliminated, PG&E is committed to managing these risks
11 and taking all reasonable measures to provide gas and electric service to our
12 customers in a way that protects the safety of the public and our employees.

13 This chapter describes the progress PG&E has made in implementing an
14 industry-leading Enterprise and Operational Risk Management (EORM) Program
15 since 2011. It also includes a description of the EORM process, including an
16 in-depth look at PG&E's Risk Evaluation Tool (RET) that is used to assess and
17 rank risks across PG&E. This chapter concludes with an assessment of where
18 PG&E is compared to other companies in the industry and a look at current
19 challenges and future areas for improvement.

20 **B. EORM Program Overview**

21 PG&E's program is based on International Standards Organization-31000
22 principles and is squarely focused on providing an in-depth analysis of the
23 enterprise and operational risks inherent in our business, the current state of
24 controls around those risks, and the options for mitigating them further.

25 PG&E's EORM Program includes a robust governance structure, standard
26 criteria and tools for assessing Company risks, dedicated resources within the
27 Chief Risk Officer's (CRO) organization and within all PG&E's lines of business
28 (LOB), defined mechanisms for cross-company collaboration, active
29 management of LOB-specific risk registers, and integration with PG&E's
30 Integrated Planning Process.

1. People and Processes

a. Personnel

PG&E's Enterprise and Operational Risk Management Department resides in the Chief Risk Officer Organization and reports to the CRO. The CRO reports to PG&E's Chief Financial Officer. Led by the Director of EORM and Insurance, the EORM Department:

- Develops, implements and maintains enterprise-wide risk management guidance for the business.
- Partners with, and coaches, LOB risk managers and other key individuals to help identify, evaluate and mitigate risks.
- Provides process support, advice, and recommendations to ensure effective risk management within the business.
- Evaluates quality and tracks the implementation of mitigation activities.
- Leads the risk components (Session D as previously described in Chapter 1) of PG&E's Integrated Planning Process.

Each LOB also employs dedicated staff to implement the EORM Program standards and procedures within their own LOB. These employees are responsible for:

- Managing the LOB's risk register.
- Leading risk identification and evaluation workshops within the LOB.
- Working with subject matter experts (SME) to develop a risk response strategy, including alternatives analysis.
- Ensuring risk mitigation activities are implemented according to an agreed upon schedule.
- Developing metrics to track progress and assess the effectiveness of mitigations.

b. Committees

Committees serve an important oversight role within the EORM Program. At the Board of Directors, PG&E's audit committee is responsible for overseeing the EORM Program. Oversight of specific enterprise-level risks are addressed by the various Board committees, primarily the Nuclear, Operations and Safety Committee. Board

1 committees complete in-depth reviews of each enterprise-level risk at
2 least once every 12 months.

3 PG&E's Risk Policy Committee, comprised of PG&E's most senior
4 officers, annually reviews progress made by each LOB in implementing
5 the EORM Program and how PG&E's risk profile may be changing
6 over time.

7 In addition, each LOB has its own Risk and Compliance Committee.
8 Chaired by the most senior officer of the LOB, these Risk and
9 Compliance Committees typically meet at least four times per year and
10 are responsible for overseeing EORM activities within their LOB,
11 including reviews of risk assessments and progress made in
12 implementing mitigation activities.

13 **c. Monitoring and Metrics**

14 Once PG&E has identified and evaluated risks, determined which
15 ones must be mitigated further, and secured the resources to do so,
16 PG&E's standards require LOBs to monitor progress. Mitigations are
17 tracked and reported at regular LOB Risk and Compliance Committee
18 meetings and, on a quarterly basis, mitigation progress is discussed at
19 PG&E's Business Plan Review meeting chaired by the President. If
20 mitigation plans are delayed, an action plan is created.

21 PG&E's EORM standard includes identification of metrics to help
22 evaluate the results of mitigation plans and to detect if conditions are
23 changing in a way that would trigger a re-evaluation of the risk. These
24 metrics can help determine if the risk reduction plan has been
25 successful, or if the LOB needs to adjust its course. In many cases,
26 LOBs have developed and are monitoring these metrics. In other cases,
27 these metrics are under development or are being refined.

28 Lastly, the EORM team oversees the implementation of risk
29 response activities, and the LOBs' implementation of the EORM process
30 to ensure that standards are adhered to and progress is being made in
31 implementing the right mitigations to reduce the risk.

2. History of the Program

After establishing the standards and procedures for implementing EORM in 2011, PG&E's Risk and Audit Organization focused on implementing PG&E's vision of data-driven, risk-based decision making to support safe, reliable, and affordable electric and gas service that is integrated into PG&E's planning process and becomes the foundation for our regulatory rate cases.

In 2012, each LOB began working with the standards and procedures issued by the Chief Risk and Audit Officer and began to build LOB-specific risk registers. Through this work, PG&E began to use a common risk language and developed a deeper understanding of the risks PG&E faces and the drivers behind them.

The development of formal risk registers began in 2012, although at this time, the risk identification effort took place as a stand-alone process.

3. Integration With PG&E's Planning Processes

Once risk registers were established in each LOB, the focus shifted to integrating risk into how PG&E plans and prioritizes work. In 2013, PG&E held its first annual Session D, which is a senior management discussion of the top risks and compliance requirements facing PG&E. Session D—which began as a one-day meeting and has now expanded to two days—remains an annual event where the senior officers spend time discussing how top risks are being managed, where collaboration across LOBs is required, and where additional resources may be needed.

As one of the first steps in PG&E's Integrated Planning Process, Session D helps to develop an understanding of the top risks and compliance requirements and that knowledge informs PG&E's strategy and execution plans. As mentioned in Chapter 1, these strategy and execution plans are called Session 1 and Session 2, respectively, and are informed by Session D.

C. The Risk Evaluation Tool

1. Purpose

Central to PG&E's EORM Program was the development and use of PG&E's RET. The EORM team created RET as a means of facilitating an

apples-to-apples comparison of risks across LOBs, and to ensure that the risks that rise to the top of the priority list are those that have the largest potential of preventing PG&E from achieving its objective of providing safe, reliable, and affordable service to its customers. RET is used to establish a risk score for each risk and to establish a relative priority for discussion and management purposes. The RET score is a product of the potential impact and the frequency of a risk event. Each risk event is further described as a SME-proposed Probable Worst Case (P95)¹ scenario.

2. Evolution of the Tool

The initial RET Model (referred to as RET1) was modified in 2013 to produce RET2, and again in 2014 to create what is now referred to as RET2.1. The RET1 Model used a 3 × 3 matrix of high, medium, and low impact vs. high, medium, and low frequency. Additionally, the RET1 algorithm was linear in nature and placed more emphasis on frequency than impact. Given concerns about the inability to correctly predict frequency, there was less confidence in the RET1 output. RET1 also resulted in less-than-desired differentiation of risks. That is, many risks were high impact, low frequency and occupied the same spot on the graphic output, described below as a “heat map,” limiting its usefulness in identifying areas of focus.

RET2 was developed to address these deficiencies. RET2 employed a 7 × 7 matrix with additional specificity included in the criteria definitions. The algorithm was changed to a logarithmic scale to increase differentiation between risks and provide a better view of relative priority of risks. One year after implementing RET2, the EORM team revisited the definitions within the impact criteria and made adjustments to the descriptions in the “Reliability” impact category² to address LOB feedback. Although relative ranking did not change significantly between RET2 and RET2.1, the descriptions within Reliability better resonated with the LOBs using the tool.

¹ The P95 scenario is based on the concept of plotting a range of outcomes along a distribution and choosing the 95th percentile event for the purposes of the risk discussion. In practice, for many risks—in the absence of quantitative support—PG&E identifies a reasonably probable worst case scenario rather than a range of outcomes.

² The six impact categories in the RET model are described in the next section.

1 Additionally, RET2.1 included increased flexibility in the frequency
2 criteria. No longer are risk assessments limited to seven frequency
3 categories. If there are data to support a specific frequency, e.g., through
4 the use of probabilistic risk assessments, LOBs may use that data to
5 calculate the risk score.

6 **3. RET2.1**

7 **a. Inputs**

8 **1) Risk Score**

9 As mentioned above, the RET2.1 is used to establish a number,
10 called a risk score for each risk to establish relative priority for
11 discussion purposes. The RET2.1 score is a calculation based on a
12 SME discussion of the risk associated with the P95 scenario.
13 The potential impacts of the scenario across six impact categories
14 are then scored between 1 and 7 (7 being the greatest impact).
15 The six impact categories are: Safety, Environmental, Compliance,
16 Reliability, Trust and Financial. Once the impact is articulated,
17 a frequency or probability based on data and subject matter
18 expertise is assigned to each risk scenario. The algorithm
19 discussed in Attachment A is then applied to create a score
20 between 1 and 10,000.

21 **2) Risk Status**

22 When a risk is first identified, its status is denoted as “black”
23 indicating that a risk assessment must be completed to determine a
24 current residual risk score. During the risk assessment, the risk
25 owner will gather as much data and expertise on the subject to fully
26 characterize the risk drivers and controls and to score the risk.

27 Once the risk assessment is complete, the team determines
28 what level of control status should be recommended to the LOB
29 Risk and Compliance Committee. The following statuses are
30 available:

- 31 • Red – controls not adequate
- 32 • Amber – controls need strengthening
- 33 • Green – controls are adequate

1 A risk response plan is created for a risk with Red or Amber
2 status. The response plan includes a set of mitigations based on an
3 alternatives analysis to determine the best course of action to
4 reduce the risk and strengthen controls.

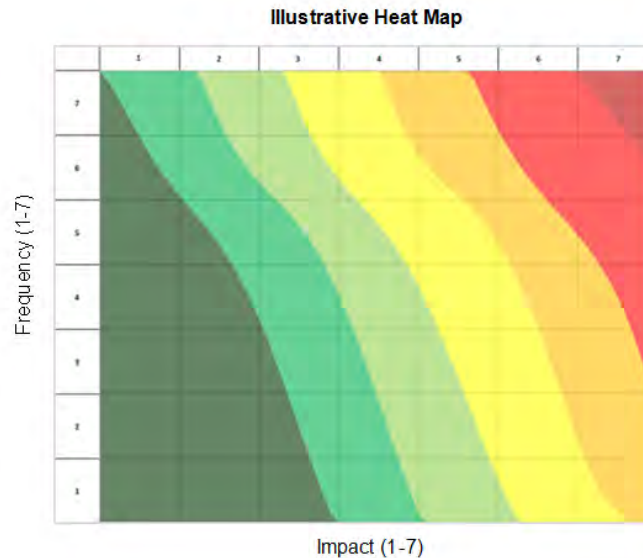
5 Over time, risk scores tend to be more static than the risk
6 status. The risk status should change toward green as the
7 mitigations are implemented and the controls are strengthened to an
8 adequate level. The risk score will only change if mitigations
9 fundamentally adjust the impact or frequency levels. In other words,
10 impact scores may change only if mitigations can physically prevent
11 or reduce the impact of the P95 scenario.

12 For example, if the P95 scenario risk is “a car accident which
13 may result in a death,” a mitigant such as a physical divider between
14 the lanes could change the worst case probable P95 scenario from
15 fatality (head-on collision), to “a car accident which may result in a
16 serious injury (i.e., hitting the divider).” This will drop the impact
17 score and, likely the frequency as well. However, physical mitigants
18 are not always possible or practical. More often, mitigations are
19 more likely to impact the frequency side of the equation. For
20 instance, if a substation were to fail catastrophically, the impact
21 always would likely be catastrophic. But it may be possible to make
22 catastrophic failure less likely to occur by addressing the drivers of
23 the risk by maintaining, inspecting and replacing equipment, and
24 installing physical and cyber security measures.

25 **b. Output**

26 The output of RET 2.1 is a risk score for each risk. These scores
27 can be mapped on a “heat map” that graphically portrays the frequency
28 and impact scores. An illustrative heat map is shown in Figure 2-1.

**FIGURE 2-1
PACIFIC GAS AND ELECTRIC COMPANY
ILLUSTRATIVE HEAT MAP**



The y-axis on the heat map represents the frequency score, while the x-axis represents the impact score. The upper right hand corner of the heat map represents the highest risks; the lower left hand corner represents the lowest risks.

Because each LOB calculates its own risk scores, LOBs participate in calibration sessions to ensure consistency in scoring. SMEs and risk managers calibrate risks internal to their LOB and then the EORM team facilitates cross-LOB calibration sessions to ensure risks from different parts of the business are evaluated consistently. During each of these sessions, participants challenge assumptions and other inputs to risk scores to ensure there is alignment in how risks were evaluated. Once the calibration is complete, top risks to PG&E are selected for discussion in PG&E's Session D meeting.

4. Illustrative Example

An example helps to illustrate how RET 2.1 is used to create a risk score from a risk assessment. Consider the risk of "Failure of Distribution Overhead Primary Conductor," defined as:

1 The failure of or contact with energized electric distribution primary
 2 conductor may result in public or employee safety issues, significant
 3 environmental damage (fire), prolonged outages, or significant property
 4 damage. Energized wires down events are also considered part of this
 5 risk.

6 In this case, the P95 scenario is described as: A fatality due to
 7 unintentional third-party tree worker contact with an in place conductor, in
 8 conjunction with an investigation that finds compliance violations such as
 9 lack of signage, or insufficient clearance.

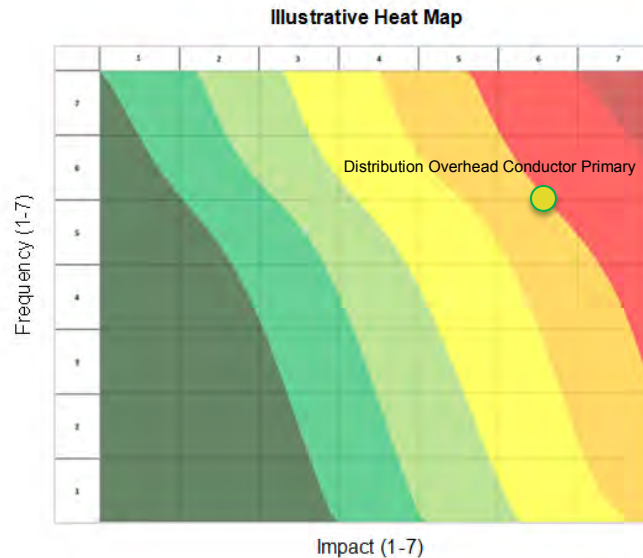
10 Once defined, the risk assessment team scores the risk by determining
 11 the impacts across the six impact categories (see Attachment B) and the
 12 frequency of such an event, and captures those determinations in the RET.
 13 In this case, the following scores were assigned:

- 14 • Safety impact: A 6 (Severe) impact captures the potential for a fatality
 15 to occur if contact was made with a distribution conductor. This is based
 16 on industry data and experience.
- 17 • Environmental impact: Under the scenario, there would be a
 18 1 (Negligible) impact on the environment.
- 19 • Compliance impact: The scenario assumes a compliance violation,
 20 which was rated as a 3 (Moderate) impact by the team based on
 21 industry experience.
- 22 • Reliability impact: The team reviewed outage history that would occur
 23 relative to the incident and determined that a 3 (Moderate) impact
 24 described the potential impact.
- 25 • Trust impact: The team determined a 2 (Minor) impact believing that
 26 there may be a single report of the event in a media outlet near the
 27 location of the incident, were it to occur.
- 28 • Financial impact: Available data supports a 4 (Major) impact.

29 Finally the team reviewed the scenario, the impact scores, and the data
 30 around the drivers and controls and determined that a frequency level of 5,
 31 or once every one to three years, was appropriate.

32 The six impact scores and the frequency level are then input into the
 33 tool, producing a final risk score of 408. The results of the scoring of the
 34 Overhead Conductor Risk can be displayed on the heat maps as shown.

**FIGURE 2-2
PACIFIC GAS AND ELECTRIC COMPANY
MAPPED RISK SCORE FOR OVERHEAD CONDUCTOR**



D. Areas for Focus and Improvement

1. Where PG&E Is Compared to Our Peers

Informed by industry benchmarking studies, the recommendations of the Independent Review Panel, and a third-party consultant, PG&E has moved from having an “industry standard” enterprise risk management program to having an “industry-leading” EORM Program. PG&E’s EORM Program is leading as evidenced by the risk-informed process of integrated planning and the widespread support for risk management in terms of personnel and management attention. Senior management regularly engages in discussions about risk, the state of controls and mitigation plans, and has increased the focus on developing and monitoring key measures that provide insight into how risks are being managed.

Today, PG&E is in a position where each LOB knows and understands the risks associated with their business and the relative importance of those risks with respect to the potential impact they could have on the achievement of objectives. And the LOBs use this information to inform strategies and resource allocation.

PG&E is proud of where it is today in terms of risk management. That is not to say there is no room for improvement.

2. Key Challenges

Effective risk management is an iterative process. As new data becomes available, operating and environmental conditions change, and technology improves, so does PG&E's ability to identify, evaluate, prioritize and mitigate risks. As does PG&E's ability to dedicate the appropriate amount of resources to manage our most important risks and to demonstrate the risk reduction benefits of the investments PG&E is making.

As PG&E identifies and integrates new data sources, it will develop a deeper, more granular understanding of the risks it faces and will be able to make better decisions as a result. When new information becomes available, risk management priorities may shift over time and it is important that PG&E remains dynamic in its response to that new information. This means that changes will be made to PG&E's plans and it will deploy resources accordingly. PG&E will identify risk mitigations that do not have the intended effect and will have to change course. PG&E will also identify new risks. As new information becomes available, risks that PG&E thought were important, may take a back seat to other, more pressing risks. PG&E's focus on data-driven decision making combined with the ability to pivot to address mitigation needs in a timely manner, will help PG&E operate in a safer and more efficient manner to the benefit of PG&E's customers, employees and the public.

a. Risk Quantification

As PG&E's EORM process has matured and progress has started to be documented, there has been an increased focus on data and quantification of risk to answer two basic questions: (1) Are we making progress in managing risk; and (2) How do we know?

In 2014, the EORM team in the Risk and Audit Organization implemented a risk management database to provide better oversight of risk management activities. Risk managers in each of the LOBs began identifying data needs and fulfilling them by gathering information from PG&E and industry sources, and analyzing it to better understand risks. The outcome of that work has been the development of metrics to track and manage risks. The availability of relevant data remains a challenge, however.

Often, it is not possible to tie mitigations directly to the absence of a risk event. For example, PG&E has invested in a number of activities to educate the public about the dangers of contact with energized conductors—a top public safety risk included on the Electric Operations Risk Register. It is very difficult to prove that someone did not touch an energized conductor because they heard an advertisement on the radio, or paid attention to a mobile pop-up advertisement while they were shopping at Home Depot, or were already aware of the danger.

In some cases, data can be obtained to confirm that mitigations are effective, but often PG&E must rely on the fact that it went through a reasonable process to identify the right things to do and PG&E may not be able to determine the effectiveness of an individual mitigation.

PG&E's goal remains to achieve the vision of data-driven, risk-based decision making to support safe, reliable, and affordable electric and gas service that is integrated into our planning process and becomes the foundation for our rate cases. With the core foundational components of an industry leading EORM program now in place, PG&E is working on refining its approach and improving the maturity of the process, with a focus on data and its application within EORM.

b. Risk Tolerance

Risk cannot be completely driven out of PG&E's—or any—business. Today, risk tolerance is implicitly defined by the resources allocated to manage specific risks. For example, PG&E has a robust program to manage Wildfire Risk that consists of an award-winning vegetation management program, equipment retrofits in high-risk areas, and enhanced inspections. As a result, tree-related outages are in the neighborhood of 17 per 1,000 miles, < 0.02 percent of trees in contact, and there are a small number of wildfires caused by PG&E equipment each year. It may be possible to drive tree-related outages to less than 17 per 1,000 miles, or to have less than 0.02 percent of trees in contact, but that would require a level of investment greater than what PG&E is making today. With limited resources—PG&E cannot do everything and must decide at what point it is okay to not mitigate the risk further—tradeoff decisions must be made. For example, additional

investment in managing wildfire risk requires that customers either pay more, or accept higher risk in another area. PG&E is using the EORM process to help decide where to dedicate additional resources, and specifically where it has determined the risk has a current residual risk that is higher than desired. PG&E's Risk Informed Budget Allocation process, described in Chapter 3, also helps direct resources to projects and programs that have the largest risk reduction impact.

In the 2017 General Rate Case showing, PG&E will illustrate the projects and programs intended to address key risks in each operational LOB. By showing how these activities for which PG&E is requesting funding relate to risk reduction, intervenors and other stakeholders can see what risks are affected when reductions in specific programs or elimination of specific projects are recommended. As a result of this discussion, the Commission, intervenors, and PG&E will together define risk tolerance for PG&E.

3. Areas of Future Activities

PG&E's EORM focus for the foreseeable future can be broadly categorized as "Continuous Improvement." PG&E is focused on refining our current processes and improving the specific mechanics of risk management, i.e., how PG&E measures risk, the analysis PG&E does around alternatives for mitigation, and how PG&E calculates progress in risk management through the use of effectiveness metrics.

The EORM team also will continue to work with the LOBs to:

- Develop data plans for top risks, identifying what data PG&E needs, what data it has, and how to fill the gaps.
- Improve existing guidance and support for alternatives analysis and documenting decisions related to mitigation activities.
- Develop more effectiveness metrics that measure the impact of mitigation activities on risks or drivers of risk, and those that provide insight into how a risk is performing over time, i.e., is the risk increasing or decreasing?

With the basic elements of industry-leading risk management now in place, PG&E's focus is on collectively "upping our game" in the area of risk management. In support of this, the EORM team will continue to sponsor

1 expert training on specific risk management topics (annual training that is
2 provided to all risk managers across PG&E); conduct benchmarking and
3 share best practices from internal and external sources across LOBs; and
4 continue to promote a risk-aware culture through the continued inclusion of
5 risk in our Integrated Planning Process.

6 In the coming years, PG&E will consider analytical approaches for
7 quantifying risk reduction (meaning a reduction to the RET risk score).
8 To do so will require appropriate data, perhaps over an extended period of
9 time. This data will need to address (or avoid) the causation challenges
10 described above. Based on the outcome of this effort, PG&E hopes to
11 identify and implement techniques for quantifying risk reduction and their
12 applicability to specific risks.

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 2
ATTACHMENT A
RISK EVALUATION TOOL (RET) ALGORITHM

CHAPTER 2

ATTACHMENT A

RISK EVALUATION TOOL (RET) ALGORITHM

The algorithm used to calculate the risk score for each P95 risk scenario is divided into two parts. The first part assesses how often a risk event occurs (frequency). The second part assesses the significance of the overall impact of each risk event. The overall impact is the log of the resulting product of the weighted impact scores in the six categories: Safety; Environmental; Compliance; Reliability; Trust; and Financial.

The risk score is expressed by the following equation in the figure below, where $f(\text{Event})$ represents the frequency component of the algorithm and $I(\text{Event})$ represents the impact component:

RISK SCORE ALGORITHM

RS _(Event)	=	k	$[0.5 \text{ Log } (f_{(\text{Event})}) + I_{(\text{Event})}]$
Where	f is the number of occurrences expected over a one-year time horizon		
And	I is the weighted impact of the event		
And	k is the scalar and is a fixed value of 3.16 (the square root of 10)		
And	0.5 is a standard factor used to calculate the variance of the aggregate impact of uncorrelated events.		

The risk score calculation enables risk managers to calculate the “net risk impact” over a range of potential outcomes that occur at different frequencies. For example, gas leaks of various grades occur at various frequencies, and some of those leaks – if left unaddressed – could cause a range of impacts ranging from negligible to potentially catastrophic. The calculation enables risk managers to take that data and generate a risk score that contemplates the probable worst case, or a 95th percentile event.

“k” is a scalar used to calibrate the risk scores to cover a range of 1 to 10,000 to create adequate separation between risks for the purposes of facilitating a management discussion.

PG&E has mapped the six categories to our goals of safe, reliable and affordable service, and weighted them, as follows:

GOAL MAPPING TO RET IMPACT CATEGORIES

Company Goal	Company Goal Weight (%)	RET Impact Categories	RET Category Weight (%)
Safe	40%	Safety	30%
		Environmental	5
		Compliance	5
Reliable	30	Reliability	25
		Trust	5
Affordable	30	Financial	30
Total	100%		100%

The weighting shown above places more importance on certain objectives over others. To balance the importance of the weighting and the magnitude of the impact, the weightings are applied at the magnitude level (10^I) of the impact groups. Therefore, $I_{(Event)}$ can be expressed as shown in the figure below:

IMPACT WEIGHTING

$$I_{(Event)} = \text{Log} \left(\sum_{j=1}^6 w_j * 10^{I_j} \right)$$

Where I_j (Safety, Environmental, Reliability, Financial, Reputation, Compliance) is the impact level of an impact group of an event

And w_j (Safety, Environmental, Reliability, Financial, Reputation, Compliance) is the weight applied to the impact group of an event

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 2
ATTACHMENT B
RISK ASSESSMENT CATEGORIES

CHAPTER 2

ATTACHMENT B

RISK ASSESSMENT CATEGORIES

FREQUENCY DESCRIPTIONS

Frequency Level	Frequency Description	Frequency per Year
Common (7)	> 10 times per year	$F = > 10$
Regular (6)	1-10 times per year	$F = 1 - 10$
Frequent (5)	Once every 1-3 years	$F = 1 - 0.3$
Occasional (4)	Once every 3-10 years	$F = 0.3 - 0.1$
Infrequent (3)	Once every 10-30 years	$F = 0.1 - 0.033$
Rare (2)	Once every 30-100 years	$F = 0.033 - 0.01$
Remote (1)	Once every 100 + years	$F = < 0.01$

SAFETY IMPACT DESCRIPTIONS

Impact Level	Description
Catastrophic (7)	Fatalities: Many fatalities and life threatening injuries to the public or employees.
Severe (6)	Fatalities: Few fatalities and life threatening injuries to the public or employees.
Extensive (5)	Permanent/Serious Injuries or Illnesses: Many serious injuries or illnesses to the public or employees.
Major (4)	Permanent/Serious Injuries or Illnesses: Few serious injuries or illnesses to the public or employees.
Moderate (3)	Minor Injuries or illnesses: Minor injuries or illnesses to many public members or employees.
Minor (2)	Minor Injuries or illnesses: Minor injuries or illnesses to few public members or employees.
Negligible (1)	No injury or illness or up to an un-reported negligible injury.

ENVIRONMENTAL IMPACT DESCRIPTIONS

Impact Level	Description
Catastrophic (7)	<p>Duration: Permanent or long-term damage greater than 100 years; or</p> <p>Hazard Level/Toxicity: Release of toxic material with immediate, acute and irreversible impacts to surrounding environment; or</p> <p>Location: Event causes destruction of a place of international cultural significance; or</p> <p>Size: Event results in extinction of a species.</p>
Severe (6)	<p>Duration: Long-term damage between 11 years and 100 years; or</p> <p>Hazard Level/Toxicity: Release of toxic material with acute and long-term impacts to surrounding environment; or</p> <p>Location: Event causes destruction of a place of national cultural significance; or</p> <p>Size: Event results in elimination of a significant population of a protected species.</p>
Extensive (5)	<p>Duration: Medium-term damage between 2 and 10 years; or</p> <p>Hazard Level/Toxicity: Release of toxic material with a significant threat to the environment and/or release with medium-term reversible impact; or</p> <p>Location: Event causes destruction of a place of regional cultural significance; or</p> <p>Size: Event results in harm to multiple individuals of a protected species.</p>
Major (4)	<p>Duration: Short-term damage of up to 2 years; or</p> <p>Hazard Level/Toxicity: Release of material with a significant threat to the environment and/or release with short-term reversible impact; or</p> <p>Location: Event causes destruction of an individual cultural site; or</p> <p>Size: Event results in harm to a single individual of a protected species.</p>
Moderate (3)	<p>Duration: Short-term damage of a few months; or</p> <p>Hazard Level/Toxicity: Release of material with a moderate threat to the environment and/or release with short-term reversible impact; or</p> <p>Location: Event causes damage to an individual cultural site; or</p> <p>Size: Event results in damage to the known habitat of a protected species.</p>
Minor (2)	Duration: Immediately correctable; or contained within a small area.
Negligible (1)	Negligible to no damage to the environment.

COMPLIANCE IMPACT DESCRIPTIONS

Impact Level	Description
Catastrophic (7)	Adverse Regulatory Actions: Action resulting in closure, split, or sale of PG&E.
Severe (6)	Adverse Regulatory Actions: Cease and desist orders are delivered by regulators. Critical assets and facilities are forced by regulators to be shutdown.
Extensive (5)	Adverse Regulatory Actions: Governmental, regulator investigations, and enforcement actions, lasting longer than a year. Violations that result in multiple large non-financial sanctions; or Increased Regulatory Oversight: Regulators force the removal and replacement of management positions. Regulators begin Company monitoring activities.
Major (4)	Adverse Regulatory Actions: Violations that result in significant fines or penalties above and beyond what is codified or a regulator enforces non-financial sanctions; or Expanded Regulations: Significant new and updated regulations are enacted as a result of an event
Moderate (3)	Adverse Regulatory Actions: Violations that result in fines or penalties
Minor (2)	Adverse Regulatory Actions: Self-reported or regulator identified violations with no fines or penalties.
Negligible (1)	No compliance impact up to an administrative impact.

RELIABILITY IMPACT DESCRIPTIONS

Impact Level	Description
Catastrophic (7)	<p>Location: Impacts an entire metropolitan area, including critical customers, or is systemwide; and</p> <p>Duration: Disruption of service of more than a year due to a permanent loss to a nuclear facility, hydro facility, critical gas or electric asset; or</p> <p>Customer Impact: Unplanned outage (net of replacement) impacts more than 1 million customers; or</p> <p>EO: 14 million total customer hours, or more than 1 million mega-watt hours (MWh) total load</p> <p>GO: 10 million total customer hours, or reduction of capacity greater than or equal to 2.1 Bcf/d for seven months</p> <p>ES: 40 percent of utility-owned generating fleet unavailable for one year</p>
Severe (6)	<p>Location: Impacts multiple critical locations and critical customers; or</p> <p>Duration: Substantial disruption of service greater than 100 days; or</p> <p>Customer Impact: Unplanned outage (net of replacement) impacts more than 100k customers; or</p> <p>EO: 1.2 million total customer hours, or more than 100 thousand MWh total load</p> <p>GO: one million total customer hours, or reduction of capacity greater than 1.2 billion cubic feet per day (Bcf/d), but less than for seven months</p> <p>ES: 20 percent of utility-owned generating fleet unavailable for one year</p>
Extensive (5)	<p>Location: Impacts multiple critical locations or customers; or</p> <p>Duration: Disruption of service greater than 10 days; or</p> <p>Customer Impact: Unplanned outage (net of replacement) impacts more than 10k customers; or</p> <p>EO: 100 thousand total customer hours, or more than 10 thousand MWh total load;</p> <p>GO: 100 thousand total customer hours, or reduction of capacity greater than or equal to 0.6 Bcf/d for seven months</p> <p>ES: 10 percent of utility-owned generating fleet unavailable for one year</p>
Major (4)	<p>Location: Impacts a single critical location; or</p> <p>Duration: Disruption of service greater than one day; or</p> <p>Customer Impact: Unplanned outage (net of replacement) impacts more than one thousand customers; or</p> <p>EO: 8 thousand total customer hours, or more than one thousand MWh total load</p> <p>GO: 10 thousand total customer hours, or reduction of capacity greater than or equal to 0.3 Bcf/d for seven months</p> <p>ES: 2 percent of utility-owned generating fleet unavailable for one year</p>

**RELIABILITY IMPACT DESCRIPTIONS
(CONTINUED)**

Moderate (3)	<p>Location: Impacts a small area with no disruption of service to critical locations; or</p> <p>Duration: Disruption of service of up to one full day; or</p> <p>Customer Impact: Unplanned outage (net of replacement) impacts more than 100 customers; or</p> <p>EO: 600 total customer hours, or more than 100 MWh total load</p> <p>GO: one thousand total customer hours, or reduction of capacity greater than or equal to 0.1 Bcf/d for seven months</p> <p>ES: one percent of utility-owned generating fleet unavailable for one year</p>
Minor (2)	<p>Location: Impacts a small localized area with no disruption of service to critical locations; or</p> <p>Duration: Disruption of up to three hours; or</p> <p>Customer Impact: Unplanned outage (net of replacement) impacts less than 100 customers; or</p> <p>EO: Less than 600 total customer hours, or less than 100 MWh total load;</p> <p>GO: Less than one thousand total customer hours, or reduction of capacity greater than or equal to 0.01 Bcf/d for seven months</p> <p>ES: 0.1 percent of utility-owned generating fleet unavailable for one year</p>
Negligible (1)	No reliability to negligible impacts.

TRUST IMPACT DESCRIPTIONS

Impact Level	Description
Catastrophic (7)	<p>Duration: Ongoing impacts for more than 10 years; and</p> <p>Media: Event is heavily reported from local through international media outlets and social media channels, with influential third parties dominating media coverage; various inaccurate information is widely reported; or</p> <p>Political: Devastating nationwide broad-based political pressure demanding intense long term outreach to policymakers and key stakeholders; or</p> <p>Customer Satisfaction: Greater than 50 percent loss of customer satisfaction through survey results; or</p> <p>Company Brand: Relationships are severed and trust is completely lost</p>
Severe (6)	<p>Duration: Ongoing impacts between 1 and 10 years; and</p> <p>Media: Event is heavily reported from local through national media outlets and social media channels, with influential third parties dominating media coverage, and various inaccurate information is widely reported; or</p> <p>Political: Extreme statewide broad-based political pressure demanding concentrated outreach to policymakers and key stakeholders; or</p> <p>Customer Satisfaction: 21-50 percent loss of customer satisfaction through survey results; or</p> <p>Company Brand: Event creates outrage and trust can't be fully recovered</p>
Extensive (5)	<p>Duration: Ongoing impacts between one quarter and one year; or</p> <p>Media: Event is widely reported in national media outlets and social media channels, with influential third parties dominating media coverage, and inaccurate information is reported; or</p> <p>Political: Severe territory wide political pressure demanding extensive outreach to policymakers and key stakeholders; or</p> <p>Customer Satisfaction: 4-20 percent loss of customer satisfaction through survey results; or</p> <p>Company Brand: Event creates serious concerns of company management while trust is severely diminished</p>
Major (4)	<p>Duration: Ongoing impacts between one week and one quarter; or</p> <p>Media: Event is heavily reported in local through national media outlets and social media channels, with influential third parties dominating media coverage, and inaccurate information is reported; or</p> <p>Political: Major territory wide political pressure demanding major outreach to policymakers and key stakeholders; or</p> <p>Customer Satisfaction: one to three percent loss of customer satisfaction through survey results; or</p> <p>Company Brand: Management is questioned and trust is diminished</p>

**TRUST IMPACT DESCRIPTIONS
(CONTINUED)**

<p style="text-align: center;">Moderate (3)</p>	<p>Duration: Short term coverage for up to one week.</p> <p>Media: Event is reported in multiple local media outlets and/or social media channels, with limited exposure beyond the coverage area; or</p> <p>Political: Moderate county level political pressure demanding moderate outreach to policymakers and key stakeholders; or</p> <p>Customer Satisfaction: Less than one percent loss of customer satisfaction through survey results; or</p> <p>Company Brand: Event isn't anticipated and trust is impacted; or</p>
<p style="text-align: center;">Minor (2)</p>	<p>Duration: Single report of the event.</p> <p>Media: Event is reported in a single local media outlet in the location where the event took place; or</p> <p>Political: Minimal political pressure demanding minimal outreach to policymakers and key stakeholders; or</p>
<p style="text-align: center;">Negligible (1)</p>	<p>No known reputation impact reported to a non-featured report.</p>

FINANCIAL IMPACT DESCRIPTIONS

Impact Level	Description
Catastrophic (7)	<p>Financial Costs: Damage to third-party properties, loss of assets and facilities, fines, lawsuits, restitution, remediation, restoration, cost of replacement energy, redistributed customer costs, amounting to a total impact > \$5 billion in costs; or</p> <p>Capital/Liquidity: Ability to raise capital significantly impacted. Dramatic decrease in stock price of more than 50 percent for more than one year; or</p> <p>Bankruptcy: Risk of bankruptcy is imminent.</p>
Severe (6)	<p>Financial Costs: Damage to third-party properties, loss of assets and facilities, fines, lawsuits, restitution, remediation, restoration, cost of replacement energy, redistributed customer costs, amounting to a total impact between \$500 million and \$5 billion in costs; or</p> <p>Capital/Liquidity: Ability to raise capital is challenged. Dramatic decrease in stock price of more than 25 percent for more than one year.</p>
Extensive (5)	<p>Financial Costs: Damage to third-party properties, loss of assets and facilities, fines, lawsuits, restitution, remediation, restoration, cost of replacement energy, redistributed customer costs, amounting to a total impact between \$50 million and \$500 million in costs; or</p> <p>Capital/Liquidity: Ability to raise capital is hindered. Dramatic decrease in stock price of more than 10 percent for up to one year.</p>
Major (4)	<p>Financial Costs: Damage to third-party properties, loss of assets and facilities, fines, lawsuits, restitution, remediation, restoration, cost of replacement energy, redistributed customer costs, amounting to a total impact between \$5 million and \$50 million in costs.</p>
Moderate (3)	<p>Financial Costs: Damage to third-party properties, loss of assets and facilities, fines, lawsuits, restitution, remediation, restoration, cost of replacement energy, redistributed customer costs, amounting to a total impact between \$500 thousand and \$5 million in costs.</p>
Minor (2)	<p>Financial Costs: Damage to third-party properties, loss of assets and facilities, fines, lawsuits, restitution, remediation, restoration, cost of replacement energy, redistributed customer costs, amounting to a total impact between \$50 thousand and \$500 thousand in costs.</p>
Negligible (1)	<p>Financial Costs: Damage to third-party properties, loss of assets and facilities, fines, lawsuits, restitution, remediation, restoration, cost of replacement energy, redistributed customer costs, amounting to a total impact of less than \$50 thousand in costs.</p>

Coordination Proceeding Special Title (Rule 3.550)
CALIFORNIA NORTH BAY FIRE CASES
Case No. JCCP No. 4955

ELECTRONIC PROOF OF SERVICE

I am over the age of eighteen years and not a party to the within action. I am employed by Berger Kahn, A Law Corporation, whose business address is: 1 Park Plaza, Suite 340, Irvine, California 92614.

On April 12, 2018, I caused to be served the within document(s) described as: **ALL PLAINTIFFS' JOINT REQUEST FOR PRODUCTION OF DOCUMENTS, SET THIRTY-FOUR, RELATED TO ALL FIRES [RFPD 383-394] (NUMBERING CORRECTED)** on the interested parties in this action pursuant to the most recent Omnibus Service List by submitting an electronic version of the document(s) via file transfer protocol (FTP) to CaseHomePage through the upload feature at www.casehomepage.com.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 12, 2018, at Irvine, California.



ATHENA KETCHER